

IN-WALL VENTILATION HOUSING

BACKGROUND OF THE INVENTION

The present invention relates to an in-wall box for a dryer vent, where the in-wall box is typically recessed. Specifically, the present invention relates to an in-wall box for a dryer vent, the box being adapted to attach to the wall studs in a house or other building.

The use of a clothes dryer in a house or other building requires ventilation of the moist air to the outside. Although sometimes the dryer is installed near the exit vent pipe to the outside atmosphere, in many circumstances it is not. Oftentimes, dryer vent ducting needs to be extended to a different level in a building from the level where the dryer is, or needs to be extended a significant distance on the same level. Usually, the most appealing method of such an extension of the dryer vent ducting is through a wall (or multiple walls).

Also, many configurations of dryer venting require the dryer to be away from the adjacent wall, thus using valuable extra floor space. This is sometimes necessary with commercially available duct systems to ensure duct integrity.

To extend the dryer venting from a room where the dryer sits to the inside of a wall, an in-wall box may be used that serves both a functional and aesthetic purpose. In-wall boxes are typically recessed, at least partially, into the wall and allow dryer vent ducting to extend to the inside of the wall, while remaining more pleasing aesthetically than a simple hole in the wall. Such boxes have at least one hole cut therein to allow ducting to fit therethrough, and which extends the ducting in a certain direction.

However, typical in-wall boxes that have been used in the past have a lip extending around the face of the box for the drywall to butt-up against. Such a structure not only

requires additional labor to get the drywall cut very nearly exact in its placement against the lip, but also requires an extra step of caulking or sealing the space between the drywall and the lip. Thus, there is a need for an in-wall box for dryer venting that is less laborious to install.

SUMMARY OF THE INVENTION

One aspect of the present invention is a housing for dryer venting comprising a top wall, a bottom wall, and two side walls that combined define an inner space sized to house a portion of venting attached to a clothes dryer; a front face plate extending from at least one of the walls; and a standoff extending rearwardly from the front face plate and having a portion of which is adapted to attach to a wood stud to hold the housing in place.

Another aspect of the present invention is a housing for dryer venting comprising a top wall, a bottom wall, two side walls, and a back wall, that combined define an inner space. It further comprises at least one standoff extending rearwardly and which comprises a beveled portion adapted to sink into a wood stud when pressure is applied to the housing.

Yet another aspect of the present invention is a method of installing a housing for dryer venting, comprising the steps of (a) providing a housing with a box portion and a face plate with at least one standoff attached to its back side; (b) providing a wood stud for a wall in a building; (c) positioning the housing so that the standoff is aligned with the wood stud; (d) applying pressure against the housing to force a portion of the standoff into the wood stud; and (e) permanently attaching the housing to the wood stud.

These and other features, advantages and objects of the present invention will be further understood and appreciated by those skilled in the art by reference to the following specification, claims and appended drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of the in-wall ventilation housing of the present invention.

Fig. 2 is a front elevational view of the in-wall ventilation housing of Fig. 1.

Fig. 3 is a rear elevational view of the in-wall ventilation housing of Fig. 1.

Fig. 4 is a side elevational view of the in-wall ventilation housing of Fig. 1.

Fig. 5 is a rear elevational view of the in-wall ventilation housing of Fig. 1 with a dryer vent duct bracketed.

Fig. 6 is a perspective view of the in-wall ventilation housing of Fig. 1 attached to a wall.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

For purposes of description herein, the terms “upper,” “lower,” “right,” “left,” “rear,” “front,” “vertical,” “horizontal,” and derivatives thereof shall relate to the invention as oriented in Fig. 2. However, it is to be understood that the invention may assume various alternative orientations and step sequences, except where expressly specified to the contrary. It is also to be understood that the specific devices and processes illustrated in the attached drawings, and described in the following specification are exemplary embodiments of the inventive concepts defined in the appended claims. Hence, specific dimensions and other physical characteristics relating to the embodiments disclosed herein are not to be considered as limiting, unless the claims expressly state otherwise.

The in-wall box housing 10 of the present invention generally includes a box portion 12 and a front face plate 14 (see Fig. 1), the structures of which are described in more detail below.

The box portion 12 of the in-wall box housing 10 includes two side walls 20A, 20B, a bottom wall 22, a top wall 24, and a rear wall 26 (see Figs. 2 and 3). The side walls 20A, 20B, the bottom wall 22, and the top wall 24 are all preferably angled between 90.5° to 92.5° with respect to the rear wall 26 so that the cross-sectional area of box portion 12 increases the closer one gets to the front of the in-wall box housing 10.

The rear wall 26 also includes two knockouts 30, 32 which are preferably located near the top of rear wall 26. Knockouts 30, 32 are preferably slightly larger than 4” in diameter and circular so that a standard round 4” dryer vent duct can fit through them. The circumferences of the knockouts 30, 32 are generally not as thick as the remaining portion of

the rear wall 26. The knockouts 30, 32 also have tabbed portions along their circumference that are the same thickness as rear wall 26, creating more stability. Thus, because the circumferences are mostly thinner, the knockouts 30, 32 can be removed by the use of a blunt object against them without damage to the remainder of the in-wall box housing 10.

Utilization of knockouts 30, 32 provide a space savings in the wall. The top wall 24 also has two knockouts 34, 36 which are the same in all respects as knockouts 30, 32. The availability of these four knockouts allows variability of use of the in-wall box housing 10, depending on where it is desired that the dryer vent duct extends. It is contemplated that the number of knockouts, their size, and their location all may vary.

Front face plate 14 is attached to side walls 20A, 20B, bottom wall 22, and top wall 24 of box portion 12 and has a rim 40 that extends rearwardly beyond the thickness of the face plate 14 itself (see Fig. 4). Six standoffs 42 are attached to the back of front face plate 14. Standoffs 42 include a cylindrical portion 44 and a beveled portion 46. The cylindrical portion 44 extends approximately $\frac{1}{2}$ inch beyond the back of rim 40. It is sized this way so that when the in-wall box housing 10 is installed, it can be tightened into the wall studs and the back of rim 40 abuts flush against the drywall. The standoffs 42 also have a hole 48 in each of them that extends the entire length of the standoff and through front face plate 14. The holes are preferably sized so that a standard wood screw can fit therein snugly.

Also attached to the back of face plate 14 are three posts 50 that have holes therein to receive a small screw. The holes do not extend through the front face plate 14. The posts 50 allow a standard metal bracket 90 to stabilize a duct that is extending through the top wall 24 of box portion 12 (see Fig. 5).

The in-wall box can be made of many different materials, but it is preferably made of a molded rigid plastic such as polypropylene. Other plastics and dressings, such as high density polyethylene as acrylonitrile-butadiene-styrene (ABS), may also be used. Use of polypropylene results in a strong structure, while allowing the knockouts to be removed easily and resulting in a relatively low cost quality product.

In operation for a retrofit, one or more knockouts are removed from the box 12, depending on which direction the dryer venting duct will extend. After an area of the drywall has been cut out or excluded to allow box portion 12 to fit therethrough, the in-wall box housing 10 is positioned so that the standoffs 42 align with the wood studs of the wall. Once aligned, the in-wall box housing 10 is pushed rearwardly so that the beveled portions 46 of standoffs 42 recess slightly into the studs. Screws are then placed in holes 48 in the front of face plate 14 and screwed through the face plate, through the standoff, and into the wall studs. The screws are tightened enough so that the bevels sink into the wall studs, and that the back of the rim 40 of front face plate 14 fits snugly and flush against the drywall (see Fig. 6). In the situation where drywall has not been installed the in-wall box housing is positioned so that the standoffs 42 align with the wood studs of the wall. The in-wall box 10 is pushed into place, forcing so the beveled portions 46 of standoffs 42 to recess slightly into rest against the wood studs. Screws are inserted through the standoffs and hand tightened. The drywall is then installed to butt up to the in-wall box. The screws are then further tightened to the standoffs 42 on the in-wall box.

The above-described invention allows variability of extending the dryer vent ducting in a number of directions, while cutting down on cost and labor versus commercially available in-

wall boxes. Furthermore, as it is preferably made of rigid plastic, it is cheaper to make than most commercially available in-wall boxes, it makes cutting of the holes easier than for metal boxes and is stackable for easy transport due to the angled walls of box portion 12. The installation of the in-wall box of the present invention allows simple installation while maintaining clearance to allow for transition from a 4-inch round duct to a 2" x 6" rectangular duct before being limited by the 3½" stud. This prevents the necessity of bending and squashing pipe to fit.

The above description is considered that of the preferred embodiment only.

Modifications of the invention will occur to those skilled in the art and to those who make or use the invention. Therefore, it is understood that the embodiment shown in the drawings and described above is merely for illustrative purposes and not intended to limit the scope of the invention, which is defined by the following claims as interpreted according to the principles of patent law, including the doctrine of equivalents.